CLAIMS

We claim:

1. A computerized system for designing, deploying, modifying, or maintaining a communications network, comprising:

a computer generated model of a physical environment in which said communications network is or will be deployed, said computer generated model providing a three-dimensional representation of locations of components within said physical environment;

a server computer or computers for running a computer program which generates said computer generated model;

at least one portable computer which acts as a client to said server;

means for downloading and storing at least a portion of said computer generated model from said server to said portable computer for displaying said three dimensional representation on said portable computer; and

a display associated with said portable computer for displaying said three dimensional pictorial representation.

2. The computerized system of claim 1 wherein said portable computer is a hand-held computer.

3. The computerized system of claim 1 wherein said three-dimensional representation is constructed from a collection of two-dimensional representations.

4. The computerized system of claim 1 wherein said physical environment is a building and said three dimensional representation includes at least one floor plan of said building.

5. The computerized system of claim 4 wherein said three dimensional representation includes a plurality of floor plans for a plurality of floors in said building, and wherein said portable computer includes a means for selecting specific floor plans of said plurality for displaying on said display.

6. The computerized system of claim 1 wherein said physical environment is a campus of buildings and said three dimensional representation includes at least one floor plan for each of a plurality of buildings in said campus, and wherein said portable computer includes a means to select a building within said campus of buildings and to display said at least one floor plan for said building selected.

7. The computerized system of claim 6 wherein said three dimensional representation includes a plurality of floor plans for a plurality of floors for said building selected.

8. The computerized system of claim 1 wherein said components are selected from the group consisting of base stations, base station controllers, amplifiers, attenuators, antennas, coaxial cabling, fiber optic cabling, connectors, splitters, repeaters, transducers, converters, couplers,

leaky feeder cables, hubs, switches, routers, firewalls, power distribution lines, copper wiring, twisted pair cabling, and wireless access points.

9. The computerized system of claim 1 wherein said communications network includes wireless communication devices.

10. The computerized system of claim 1 wherein said physical environment is an outdoor area having three dimensional topology and said three dimensional representation includes a representation of said three dimensional topology.

11. The computerized system of claim 1 wherein a position-tracking device is used to determine position within said physical environment.

12. The computerized system of claim 1 wherein said communication network components are maintained in a bill of materials.

13. A computerized system for designing, deploying, modifying, or maintaining a communications network, comprising:

a computer generated model of a physical environment in which said communications network is or will be deployed, said computer generated model providing a representation of locations of components within said physical environment, and wherein said computer generated model provides for performance prediction of said communications network based on factors selected from the group consisting of choice of components to be used within said environment, choice of locations for

said components with said environment, and orientation of said components at said locations;

a server computer or computers for running a computer program which generates said computer generated model;

at least one portable computer which acts as a client to said server;

means for downloading and storing at least a portion of said computer generated model from said server to said portable computer for displaying said representation on said portable computer; and

a display associated with said portable computer for displaying said representation and said performance prediction results.

14. The computerized system of claim 13 further comprising:

a means for inputting changes to said factors for said at least a portion of said computer generated model on said portable computer which is downloaded from said server; and

a means for uploading said changes to said server.

15. The computerized system of claim 13 further comprising:

a means for inputting changes to said factors for said at least a portion of said computer generated model on said portable computer which is downloaded from said server; and

a means for outputting predicted performance parameters of said communications network based on said inputted changes on said display of said portable computer.

16. The computerized system of claim 13 wherein said communications

network includes wireless communication devices.

17. The computerized system of claim 13 wherein said portable computer is a hand-held computer.

18. The computerized system of claim 13 wherein said representation is three-dimensional.

19. The computerized system of claim 13 wherein said representation is constructed from a collection of two-dimensional representations.

20. The computerized system of claim 13 wherein said physical environment is a building and said representation includes at least one floor plan of said building.

21. The computerized system of claim 20 wherein said representation includes a plurality of floor plans for a plurality of floors in said building, and wherein said portable computer includes a means for selecting specific floor plans of said plurality for displaying on said display.

22. The computerized system of claim 13 wherein said physical environment is a campus of buildings and said representation includes at least one floor plan for each of a plurality of buildings in said campus, and wherein said portable computer includes a means to select a building within said campus of buildings and to display said at least one floor plan for said building selected.

23. The computerized system of claim 22 wherein said pictorial representation includes a plurality of floor plans for a plurality of floors for said building selected.

24. The computerized system of claim 13 wherein said components are selected from the group consisting of base stations, base station controllers, amplifiers, attenuators, antennas, coaxial cabling, fiber optic cabling, connectors, splitters, repeaters, transducers, converters, couplers, leaky feeder cables, hubs, switches, routers, firewalls, power distribution lines, copper wiring, twisted pair cabling, and wireless access points.

25. The computerized system of claim 13 wherein said physical environment is an outdoor area having three dimensional topology and said pictorial representation includes a representation of said three dimensional topology.

26. The computerized system of claim 13 wherein a position-tracking device is used to determine position within said physical environment.

27. The computerized system of claim 13 wherein said communication network components are maintained in a bill of materials.

28. A computerized system for designing, deploying, modifying, or maintaining a communications network, comprising:

a computer generated model of a physical environment in which

said communications network is or will be deployed, said computer generated model providing a representation of locations of components within said physical environment;

a server computer or computers for running a computer program which generates said computer generated model;

at least one portable computer which acts as a client to said server;

means for downloading and storing at least a portion of said computer generated model from said server to said portable computer for displaying said representation on said portable computer;

a display associated with said portable computer for displaying said representation;

a means for measuring performance measurements within said physical environment associated with said portable computer and for inputting performance measurements into said portion of said computer generated model in said portable computer.

29. The computerized system of claim 28 further comprising a means for uploading said performance measurements from said portable computer to said server.

30. The computerized system of claim 29 wherein said means for measuring is a measurement device connected to said portable computer.

31. The computerized system of claim 28 further comprising a means for downloading said performance measurements from said server computer to said portable computer.

32. The computerized system of claim 28 further comprising a means for uploading and downloading said performance measurements from said portable computer to another computer which is different from said server.

33. The computerized system of claim 32 wherein said means for measuring is a measurement device connected to said portable computer.

34. The computerized system of claim 28 further comprising:

a means for inputting changes to at least a portion of said computer generated model on said portable computer which is downloaded from said server, said means for inputting being positioned on said portable computer; and

a means for uploading said changes to said server.

35. The computerized system of claim 28 further comprising:

a means for inputting changes to at least a portion of said computer generated model on said portable computer which is downloaded from said server, said means for inputting being positioned on said portable computer; and

a means for outputting predicted performance parameters of said communications network based on said inputted changes on said display of said personal computer.

36. The computerized system of claim 28 wherein said communications network includes wireless communication devices.

37. The computerized system of claim 28 wherein said portable computer is a hand-held computer.

38. The computerized system of claim 28 wherein said representation is three dimensional.

39. The computerized system of claim 38 wherein said representation is constructed from a series of two dimensional representations.

40. The computerized system of claim 28 wherein said physical environment is a building and said pictorial representation includes at least one floor plan of said building.

41. The computerized system of claim 40 wherein said representation includes a plurality of floor plans for a plurality of floors in said building, and wherein said portable computer includes a means for selecting specific floor plans of said plurality for displaying on said display.

42. The computerized system of claim 28 wherein said physical environment is a campus of buildings and said representation includes at least one floor plan for each of a plurality of buildings in said campus, and wherein said portable computer includes a means to select a building within said campus of buildings and to display said at least one floor plan for said building selected.

43. The computerized system of claim 40 wherein said representation includes a plurality of floor plans for a plurality of floors for said building selected.

44. The computerized system of claim 28 wherein said components are selected from the group consisting of base stations, base station controllers, amplifiers, attenuators, antennas, coaxial cabling, fiber optic cabling, connectors, splitters, repeaters, transducers, converters, couplers, leaky feeder cables, hubs, switches, routers, firewalls, power distribution lines, copper wiring, twisted pair cabling, and wireless access points.

45. The computerized system of claim 28 wherein said physical environment is an outdoor area having three dimensional topology and said representation includes a representation of said three dimensional topology.

46. The computerized system of claim 28 further comprising a position-tracking device used to determine position within said physical environment.

47. The computerized system of claim 28 wherein said communication network components are maintained in a bill of materials.

48. The computerized system of claim 28 further comprising:

a means for inputting changes to at least a portion of said computer generated model on said portable computer which is downloaded from

said server, said means for inputting being positioned on said portable computer; and

a means for uploading said changes to another portable computer that is different from said server.

49. The computerized system of claim 28 further comprising:

a means for inputting changes to at least a portion of said computer generated model on said portable computer which is downloaded from said server, said means for inputting being positioned on said portable computer;

a means for uploading said changes to said server; and

a means for displaying and storing said changes at said server.

50. The computerized system of claim 28 further comprising:

a means for inputting changes to at least a portion of said computer generated model on said portable computer which is downloaded from said server, said means for inputting being positioned on said portable computer;

a means for uploading said changes to another portable computer that is different from said server; and

a means for displaying and storing said changes at said another portable computer.

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